Eight Common Confusions
About Global Climate Change

Commonwealth Community Energy Project
(http://energy.allegheny.edu)
July 2006

Global climate change is a highly politicized issue. There's a lot at stake for a lot of people. And it's something that, as Americans, we need to keep talking about. Thomas Jefferson was fond of observing that Americans are at their best when they're debating difficult issues and, in the process, finding ways of working in common for the common good. (Jefferson had pubs in mind when he wrote this, but that's another story.)

Conversation and debate is what we're about as a country. After all, we pretty much all want the same thing: good jobs, a safe world for our children and grandchildren, personal freedom balanced by obligation to community, a clean environment, honest government and fair business practices. What unites us is a lot greater than what divides us.

Debate isn't productive, though, when it proceeds from misunderstanding or confusion. Alas, given the politics of global climate change, it's hard for some to resist the temptation to shade the science or confuse the facts to serve their own agenda. The "Eight Confusions" below are good examples.

Want to learn more about what we know for sure, what we think we know, and what we're just guessing at? Your next best step is to check out Philip Boffey's "Talking Points: The Evidence for Global Warming," in the July 4 issue of *The New York Times*. Boffey usefully describes the competing arguments and illustrates their relative strengths and weaknesses. He's not shy about highlighting the uncertainties associated with global-warming claims. He also identifies the strongest advocates of the many positions on this issue so that you can do your own research. You can collect a copy of Boffey's article from the Commonwealth Community Energy Project, or by contacting Michael Maniates at Allegheny College (814-332-2786 or michael.maniates@ allegheny.edu).

---

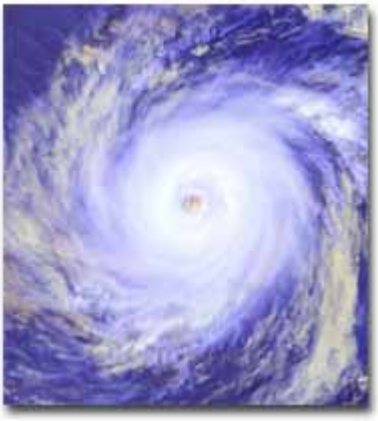
1. There's no real scientific consensus on the issue of global warming. If the scientists can't decide on this, how can I?

This one is both easy and hard. On the one hand, the leading scientific organizations have definitively adopted the view that human-induced global warming is a serious problem. An overwhelming majority of research reports in leading scientific journals support the view that human emissions of so-called greenhouse gases are warming the planet. The Bush Administration recently accepted this view as well. That humans have something significant to do with the recent rapid warming of the planet is no longer an issue of serious debate. Despite what you sometimes hear about scientists being split on this issue, it simply isn't true. On the other hand, there remains significant disagreement and uncertainty over what all this means for us. Will the warming of the planet lead to rapid changes in rainfall patterns, disease vectors, sea level, and the distribution and intensity of hurricanes? Might this warming push us towards a "tipping point" of sudden and unexpected change, like the rapid melting of polar ice? If so, we'll find it both expensive and difficult to adapt. But if change in

natural systems occur slowly, and if scary tipping points fail to materialize, then it will be easier and cheaper to adapt – indeed, warming could be a boon for agriculture and forests. Scientists can't say much that's definitive at this point about the *pace* of change – they can only talk, in general yet useful ways, about the *risks* that we're running and point to several dangerous thresholds. Thus, much of the debate really goes to questions of risk and uncertainty, and this is where reasonable people can disagree. How do we feel about running the risk of rapid, irreversible change in earth systems? What if we expect slow, easy change, but end up guessing wrong? Or, what if we spend time and money heading off climate change, only to discover later that we overreacted? Which potential mistake is better: overreacting or underreacting? These are the big, real, tough questions before us.

2. Recent natural disasters, like Hurricane Katrina and the tsunamis, are the result of global climate change.

Watch out for this one: it's making the rounds. Tsunamis have nothing to do with global climate change – undersea earthquakes are the cause of these killers. And while a warmer world will probably produce more "intense weather events" (stronger storms, larger and more frequent hurricanes, longer and hotter droughts) it's too early to say if Katrina was a "normal" massive hurricane that comes around every so often, or the first in an extended pattern of climate-change induced weather disasters. We won't know for sure until we can look back, five or ten years or more from now, for compelling patterns.



3. This "global climate change" is just a way for liberal environmentalists – Al Gore in particular – to gain political points and push for more controls over Americans and business.

Well, it's true that liberal environmentalists are worried about climate change. And Al Gore, a Democrat, is "the former next President of the United States," as he likes to say. But it's not just the tree huggers making noise. Tony Blair, Prime Minister of the United Kingdom and a staunch supporter of our war in Iraq, argues long and hard that the world must do something about climate change, and fast. The major insurance companies in the United States are calling for rapid action, as have two major oil companies: BP and Shell. Republican John McCain has made climate change one of his top issues, and a bill that he and Joseph Lieberman introduced in the Senate in October 2003 calling for rapid U.S. action on this issue failed by a vote of 43 to 55, with many pro-business Republicans voting for it (this with virtually no lobbying on the issue – with this vote, McCain simply wanted to size up where Senators stood on the issue; it was closer than most expected). Over 40 major corporations of the Business Environmental Leadership Council (including familiar names like Whirlpool, Toyota, IBM, and DuPont) are working together to reduce greenhouse emissions and change U.S. policy. Ironically, they're pushing for *less* government regulation, especially when it comes to subsidies and other government give-aways that support energy-wasteful practices.

Even Wal-Mart has announced that, after analyzing the scientific debate over the issue, it plans a major corporate push against global climate change. And, as of July 14, 2006, 266 cities in the United States – coastal and heartland, liberal and conservative, rich and poor – have joined the "U.S. Mayors Climate Protection Agreement" and set to work reducing their own greenhouse-gas emissions. Even Bill O'Reilly of Fox News says "I believe that there's global warming."

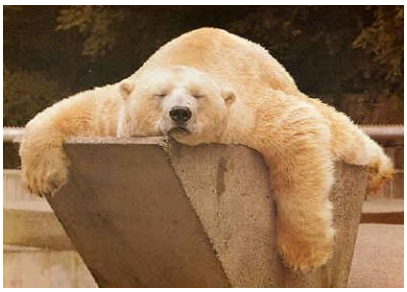
So, it's not really accurate to frame this as an "enviro-liberal" issue. The terrain is more complicated, and a whole lot more interesting.

4. Climate change has been happening long before humans came onto the scene: ice ages, tropical periods, drought. What we're seeing now is just more of the same.

Here again, yes and no. Here's the "yes:" Detailed study of climate behavior shows that over the past hundreds of thousands of years, climate does change on its own. On this there is no debate. Moreover, it can change rapidly in response to small "perturbations," or impacts, like variations in the energy from the sun or wobbles in the tilt of the earth's axis. Ice ages, warming trends, heavy rainfall, expanding and contracting deserts: it's all there in the historical record. Climate, it seems, is like that seemingly stable roommate, colleague, or old boy/girlfriend who seems fine most of time, but who can "snap" when faced with what seem to be small stresses or slights if you catch them at the wrong time. It's a system that's sometimes on the edge, and that can be moved in unstable directions if pushed hard enough at just the right time.

This understanding of climate's "personality" (which also isn't debated) leads to the "no" part of this blurb: Although climate has and does change in response to small perturbations, what worries climate scientists is that the effect of current greenhouse gases emissions on climate is *large* compared to past natural annoyances that led to sometimes abrupt climate change. So, while it may be true that recent variation in the sun's output is effecting climate, current human impacts on climate *dwarf* these natural influences. When you have a dog chewing on your ankle, in other words, you don't want to be focusing on the mosquito on your arm.

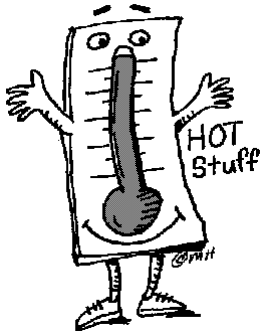
Humans, largely through their combustion of fossil fuels, are pushing on a system that has shown itself to be easily annoyed. It's akin to poking a sleeping bear with a big, pointed stick. The bear may wake up and walk away, leaving us unscathed with one heck of a wild story to tell. Or more likely, given how we've seen sleeping bears react to being poked, it may turn on us with unpredictable ferocity.



But we really don't know for sure. Bears, and climate, can always surprise. We're back to risk, uncertainty, and the distinct possibility (as opposed to certainty) of rapid, irreversible change.

5. But wait – I've read that even though greenhouse-gas emissions are rising, we're not really sure if the planet is heating up. Aren't satellites iffy and on-the-ground temperature measurements fallible? And what about those places on the planet that are cooler now than, say, ten years ago?

There's plenty for Americans to debate when it comes to climate change, but the question of an *abnormal* rise in global temperature isn't one of them. Even though global temperatures have been rising markedly for the past decade or so, climate scientists waited until 2005 to make the call that global average temperature had exceeded the range of normal climate fluctuations. They waited for proof of *extraordinary warming* before sounding the alarm (and were attacked by some environmentalists for being so conservative). The overwhelming majority of scientists studying the issue say this: we're experiencing global temperatures that are beyond the documented range of the normal ups and downs of climate.



Skeptics sometimes argue that unreliable satellite measurements of global temperature have led the scientific community to false conclusions about extraordinary warming. True, but false: Satellites are imprecise thermometers, but scientists don't rely upon them for global temperature measurements – they employ an intricate network of surface measurements around the planet. It's also sometimes said that an increasing "urban heat island" effect (cities heating up because of all that blacktop, etc.) has led scientists to the foolish conclusion that the earth is warming. This might be true if those taking the planet's temperature relied just on thermometers placed in cities – but they don't. They collect multiple measurements across the planet, on land and in the surface layer of the ocean. In fact, it's the work of these climate

"temperature takers" that first documented and later tracked this "urban heat island" phenomenon.

Finally, some critics point to places on the planet that have cooled in the past decade and argue that we're being bamboozled by all this talk of warming. These folks know (but don't tell us) that one has to look at the planet as a whole, not an isolated spot. If you're running a 101 degree fever but, as a result, your toes are cold, that doesn't mean that your thermometer is broken and your illness is all in your head. This same argument applies to the skeptics' claim that, long ago, the earth experienced warming that exceeds today's without the "benefit" of elevated concentrations of greenhouse gasses. *Some* spots on the earth were warmer then than now – but overall average temperature wasn't, at least according to the best data on hand.

6. OK, but aren't computer models that scientists use to predict warming unreliable? I read a column by George Will (a nationally syndicated columnist and TV opinionater) a few weeks back that pointed out that scientists, with their computer models, were calling for cooling in the 1970s. Now they're saying we're facing global warming. Why should we believe them and their computers now?

This is another one that's making the rounds: beware. It's true that climate scientists use computer models to assess the implications of human-induced warming. They ask questions like "will change be fast or slow," "how hot might it get," "who will be hit the hardest," and the like. They're important questions that help us think about risk and uncertainty mentioned earlier. But these models are not yet good enough to be fully predictive, and the climate scientists are the first ones to fess up to this. They're "models," not reality – and the current warnings about climate change flow less from what computers tell us and more from what we already know and can see and measure: climate is an unstable system, we're poking it with a big stick, the earth's average temperature is rising, we're seeing accelerated melting, and we may be approaching perilous "tipping points." Here's a disturbing example of the limits of the models: The Greenland ice sheets are disappearing faster and in ways utterly unpredicted by computer models, leading to considerable scientific alarm. Bottom line: Models help us think about how climate systems work…but no one views them as a reliable crystal ball.

Oh, and the recent reports about the predicted cooling in the 1970s that many of the "climate skeptics" write about? It turns out that in the 1970s, a group of respected climate scientists completed a careful study that explored the likelihood of long-term (that is, over the next couple of hundred years) cooling of the planet *in the absence of human-emitted greenhouse gases.* It got a lot of attention because of the implications for agriculture (many folks in the 1970s were worried about overpopulation and the possibility of food shortages, which might be exacerbated by a cooling world). It was soon forgotten, though, when it became apparent that humans were doggedly increasing their production of climate warming gases. Only recently has all this been trotted out – incompletely and out of context – as "proof" of scientific waffling.

7. Our economy will be decimated by any attempt to tackle climate change.

When faced with the risk of bad things happening, we buy insurance: car, health, home, and life. Buying "climate insurance" means spending $$$ to change our energy sources, alter our transportation systems, wean agriculture off its heavy reliance on fossil fuels, and help poorer countries do the same. It's a tall order. Some say the cost will break us, creating massive unemployment and depression-era conditions. Others insist that such investments will spawn a renaissance of technological innovation and an economic boom. Poll the dozens of economists with

great track records and no compromising links to environmental groups or the fossil fuel industry, and here's what you consistently hear: The *overall* economic impact of significantly reducing the danger of climate change would be small but significant, 0.5% - 1% of overall economic growth over the next few decades – but these costs would be recouped by later, accelerated economic prosperity as we wean ourselves off of expensive oil. The problem has more to do with *regional* economic effects: the major coal producing states would be hit the hardest (since coal is a major source of carbon-dioxide and its use would be restricted), and people and businesses there would suffer. Meanwhile, other states tied to the renewable energy industry would flourish. It's not really, then, an economic issue so much as a knotty political problem. Until we agree as one country about how to share *all* the costs and benefits of minimizing our climate-change risk, the economic losers naturally will fight like the dickens to block any "insurance policies."

8. Existing international efforts (like the Kyoto Protocol) to address climate change are inconsequential and flawed. In the end, even if we wanted to do something about this issue, nothing much will happen because international cooperation is too difficult.

The Kyoto Protocol, adopted in late 1997 after some ten years of international negotiation, is now in force as international law. It commits rich countries to reduce their greenhouse-gas emissions to an average of 5.2% below 1990 levels by 2012, and poor countries to enter into binding negotiations after this base period.

The framers of the Protocol argue that the rich countries are both *capable and culpable* – they have the money to fix the climate problem, and they're responsible for the bulk of climate change gases in the atmosphere. So, it's said, they should go first in addressing this problem, in the hope that their early action will reduce the cost of "climate insurance" technologies for poor countries. An opposing school of thought notes that the poor countries (especially China and India) are rapidly increasing their greenhouse-gas emissions; thus any logical agreement must simultaneously compel them to rein in their discharges. Australia and the U.S. are two industrialized countries that subscribe to this second view – and they're the only two countries in the industrialized world that have rejected the Kyoto process (though major corporations and many cities within their borders are working hard to meet or exceed the Kyoto guidelines).

What are we to make of Kyoto? Some commentators argue that a paltry "5%" shows how weak and meaningless the Protocol really is. They forget to include the "5% *below 1990 levels*," which results in a ~ 20% reduction in overall greenhouse-gas impact on the climate in 2012 compared to where the world likely would be without the Kyoto agreements. Others note that *even if* the signatory countries are successful in meeting their Kyoto commitments (which isn't clear), the resulting reductions won't meaningfully reduce the risk of rapid, unexpected climate change. Alas, on this point there is overwhelming scientific agreement. The best climate computer models (but remember, they're just models) suggest that reductions in greenhouse-gas emissions of **60 - 80%** below 1990 levels over the next few decades are necessary to avoid major risks to climate stability. Ouch. Proponents of the Kyoto process respond that the Protocol was never intended to be some diplomatic, international "end point." It was meant to get the ball rolling, build international trust and cooperation, spark a new breed of renewable energy technologies, and foster mechanisms for trading "carbon credits" among countries. Just down the road, these people argue, lie a stronger set of "post Kyoto" greenhouse measures that must involve all the countries of the world, not just the rich. It's the "baby steps" approach to global cooperation for climate safety – but many worry that it's all too little, too late.

Perhaps the most vocal objections center on this idea of the rich going first. Several months before Al Gore flew to Kyoto in 1997 to secure what we now know as the

Kyoto Protocol, the Senate took up the issue of international climate agreements. The outcome was an oft-cited 95-0 Senate vote on a non-binding resolution that said that the Senate would not support any global warming pact that did not also bind developing countries to mandatory greenhouse-gas targets. That July 1997 vote is frequently cited as evidence of little American support for a "capable/culpable" approach to international agreements that have those who've created the problem go first, paving the way for other countries later. Non-binding resolutions, though, aren't always taken seriously by Senators – they're often more about publicity than policy. The McCain-Lieberman Senate Bill in 2003, which would have had the U.S. support most of the Kyoto Protocol measures –a *real* vote on a *real* piece of legislation (which, you'll recall, failed 43 to 55, but with little lobbying on either side) – is far more instructive.

Global cooperation is messy business, and the Kyoto Protocol is no exception. Most can agree that Kyoto is a well-intention effort that's had some positive effects – but whether it can deliver on its ultimate promise of climate stability hinges on the progress that key signatory countries make on their emission-reduction commitments in the next 24 months. If most of these countries make good progress on their targets, it's possible to imagine international momentum forming for a more ambitious set of goals that draw China and India into the mix. And, as major corporations plan for and develop technologies for a "Kyoto world," one can see them bringing political clout to bear to make this so. In the end, though, this probably is all fanciful thinking unless the United States – still the single greatest emitter of greenhouse gases – returns to the Kyoto process in some rather remarkable way. Without strong U.S. leadership on this issue, it's hard (but not impossible) to fathom how China, one of our biggest trading partners and the second ranking producer of greenhouse gases (behind the U.S.), also steps up to the plate. And without China's participation, and India's too, it's tough to see a path through the woods.

Which is why, as you make your way to the end of this very long tome, it's important for Americans to continue debating this issue, and to keep searching for common ground. Our actions and decisions, as individual citizens and a collective country, set the stage for decisions and policy around the world.

Written by Michael Maniates, Professor of Political Science and Environmental Science, Allegheny College, Meadville, PA 16335. 814-332-2786, michael.maniates@allegheny.edu Questions and comments are welcome.